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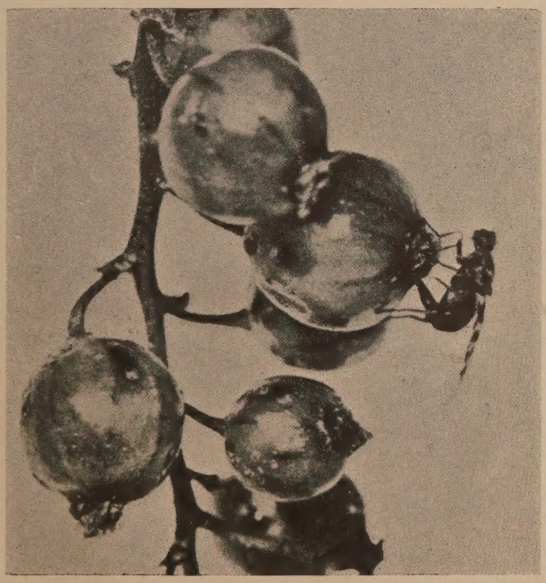
The Currant and Gooseberry Maggot

or Yellow Currant Fly *(Epochra canadensis)* Loew

S. C. JONES



TOO LATE!

Sprays must be applied before flies lay their eggs in currants or gooseberries.

(Photograph by J. H. Paine, Psyche, XIX: 5, 1912.)

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Spray Program for Control of Currant or Gooseberry Maggot

1. Apply first spray within one week after the flies begin to emerge or when the gooseberries begin to set fruit. See Figure 8.

2. Apply later sprays at weekly intervals beginning one week after the first application and continuing to within one week from the time harvest begins.

3. Sprays should be repeated after each and every rain.

The Currant and Gooseberry Maggot or Yellow Currant Fly (*Epochra canadensis*) Loew

By

S. C. Jones, Assistant Entomologist*

TWO fruit flies of economic importance to growers of currants and gooseberries occur in Oregon. The yellow currant fly, *Epochra canadensis*, Loew, is a serious pest of both currants and gooseberries in Oregon. The dark currant fly, *Rhagoletis ribicola*, Doane, is a very important pest of currants and gooseberries in Washington, but is no more than a potential pest of these crops in Oregon, where it confines its ravages chiefly to wild currants in Eastern Oregon.

How to distinguish the yellow and black currant flies. The yellow currant fly is about the size of the common house fly. Its body is much longer, however, than that of the house fly. See Figure 1. The body, legs, and head of the fly are yellow and its eyes are iridescent. The wings are prettily marked with dusky bands. See Figure 2, showing wing markings.

The dark currant fly is much smaller than the yellow species. Its body is dark; its head and legs are yellow and its eyes iridescent. The wings are marked with four dusky bands.

The habits of the two species are quite similar except that the black currant fly appears on currants or gooseberries later than the yellow species. Both lay their eggs under the epidermis of the berries and behave in the same nervous manner, fluttering their wings and moving constantly from one berry to another. Each fly is capable of laying as many as 200 eggs. Usually one egg is laid in a berry, but occasionally more than one is found. Both species produce one generation a year.

Economic importance. The yellow currant fly is indigenous to the United States and is distributed in the northern states from the Atlantic to the Pacific Ocean and south as far as California. Although it causes severe losses to currant and gooseberry growers in eastern United States and Canada, the losses in the states west of the Mississippi River and in British Columbia are regarded as even more severe. In Oregon there are many potential growers of currants and gooseberries who do not now grow these crops partly because of the ravages of this pest. It is a common practice among those who do grow gooseberries to harvest their crops before the fruit has fully matured in order to escape infestation, thus sacrificing both quality and quantity to a considerable extent.

Nature of the injury. Both currant flies lay their eggs under the epidermis of gooseberries and currants. The oviposition marks are not at first easily seen but they soon become conspicuous. The tissue that is injured by the ovipositor begins to darken and ceases to grow. See Figure 3. The tis-

* Photographs appearing in this circular were taken by K. W. Gray, Entomology Department, Oregon State College.

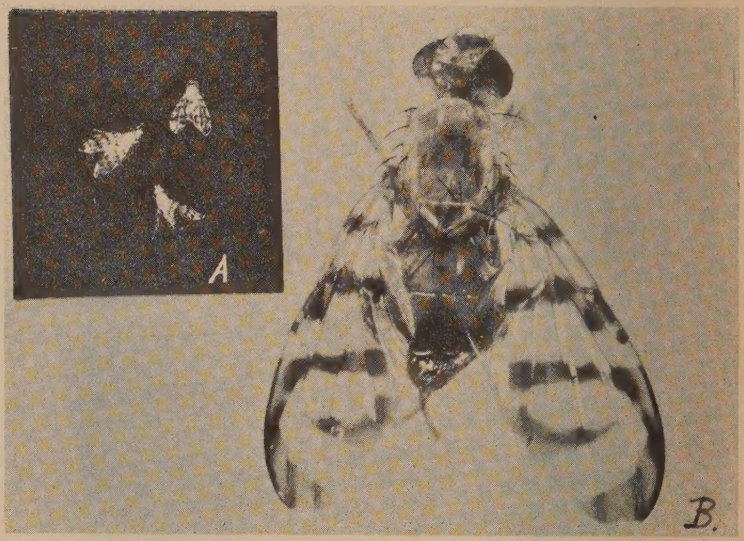


Figure 1. A. Adult yellow currant fly *(natural size)* B. Adult yellow currant fly *(enlarged nine times).*

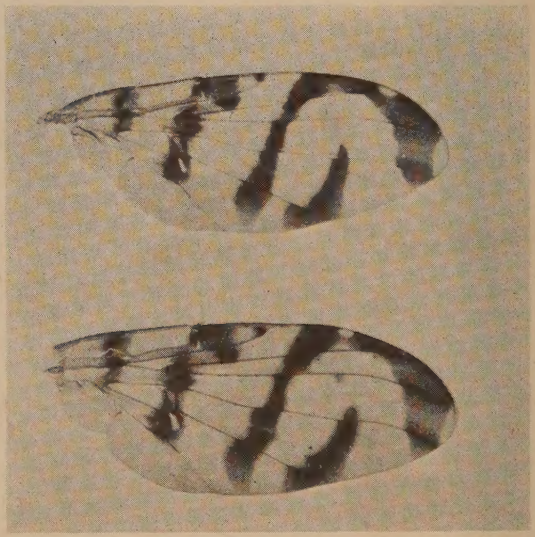
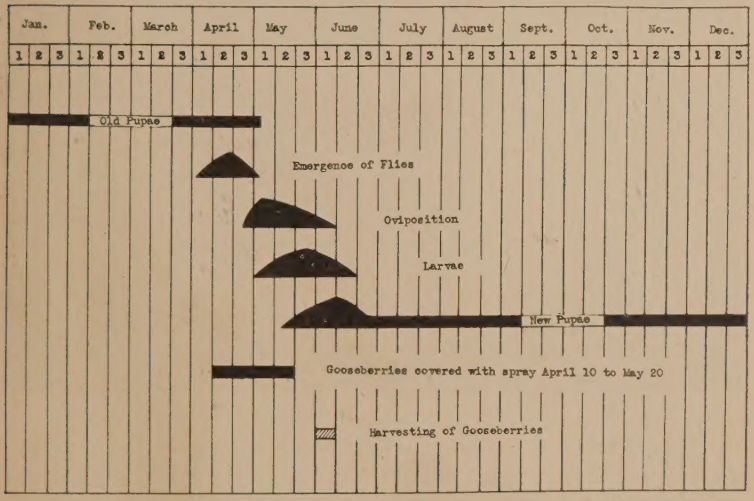


Figure 2. Wings prettily marked with dusky bands *(enlarged nine times)*

sue surrounding the puncture grows and soon gives the berry a lop-sided appearance. Infested berries display a cloudy appearance over the burrow or path made by the larvae. Such berries usually fall prematurely from the bushes. Probably most of the larvae emerge after the fruit falls to the ground, although at least some will emerge before the fruit falls. An infested crop is usually worthless unless there is an unusual demand for the fruit. In such cases considerable trouble and expense is experienced in sorting out infested fruit.

Flies observed in April. The timing of spray applications is dependent on the time of emergence of the flies. Provision was made in 1930, 1931, 1932 and 1933 for obtaining accurate information on the emergence of the yellow currant fly in Western Oregon. The beginning of emergence was found to be as follows: In 1931, April 11; 1932, April 7; 1933, April 18; and 1934, March 29. Although the peak of emergence was reached within about twelve days after the beginning of emergence, the flies continued to emerge for approximately one month.



Seasonal history of the yellow currant fly on gooseberries in the Willamette Valley, Oregon.

Oviposition begins in April and May. Egg laying usually begins about two weeks after the flies emerge from the soil. Eggs were found in gooseberries near Corvallis as early as May 2, 1931; May 9, 1932; May 29, 1933 and April 16, 1934. The eggs are oblong in shape, shiny white and pitted on one end by a hexagonal pattern. See Figure 4. They are very small, being about one twenty-fifth of an inch in length.

The incubation period of the egg is approximately five days, depending on climatic conditions.

Larvae become numerous in May. At the end of the incubation period the tiny larva frees itself from the egg and immediately makes a winding burrow for a short distance just beneath the epidermis of the fruit before burrowing to the center of the berry. See Figure 5. It feeds on the seeds and pulp of the fruit until full grown. One larva may consume all or most of the contents of one berry. Usually only one larva is found in a berry but sometimes there are as many as three. Larvae usually begin to appear in

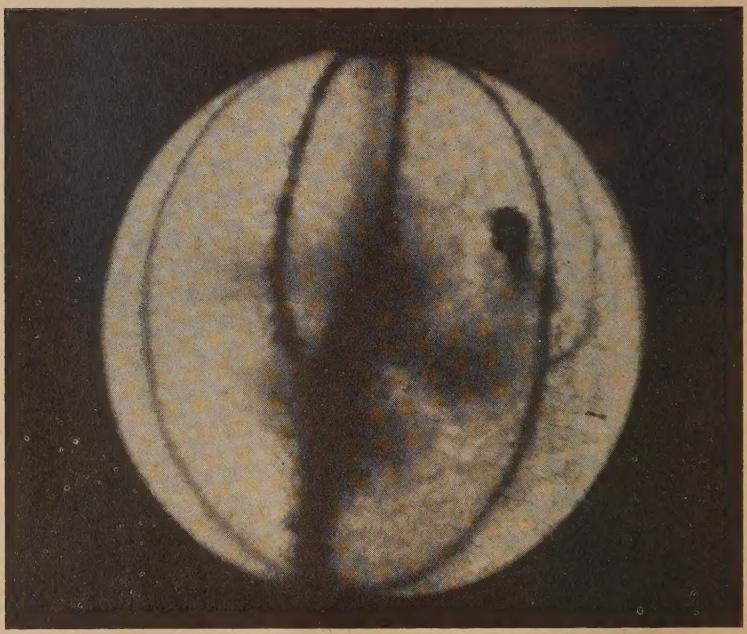


Figure 3. Gooseberry showing darkened oviposition mark *(enlarged nine times)*.

gooseberries in May. These data are based on observations made in a gooseberry planting near Corvallis in which records of the beginning larval period were made as follows: Larvae were first observed in 1931, on May 8; 1932, May 14; 1933, May 29; and 1934, April 27. The larvae reach maturity in about fifteen days. See Figure 6.

Pupa live in soil ten months of the year. As soon as the larvae reach their full growth they make holes in the gooseberries or currants through which they emerge. They may conceal themselves in the leaves or rubbish directly under the bushes or may enter the soil to a depth of 1 to 2½ inches. The larvae soon molt and change to puparia. See Figure 7. Inside the puparia they change into pupae and remain in this condition until the following spring when they emerge as flies.

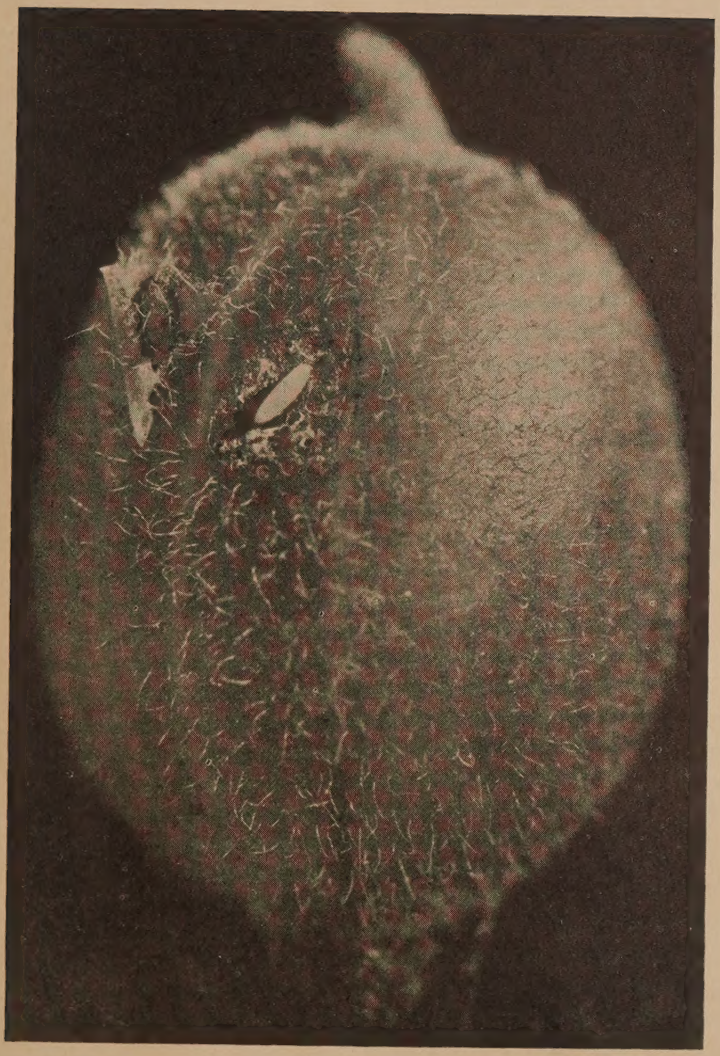


Figure 4. The shiny, white eggs of the yellow currant fly are laid under the skin of gooseberries and currants *(enlarged nine times)*.

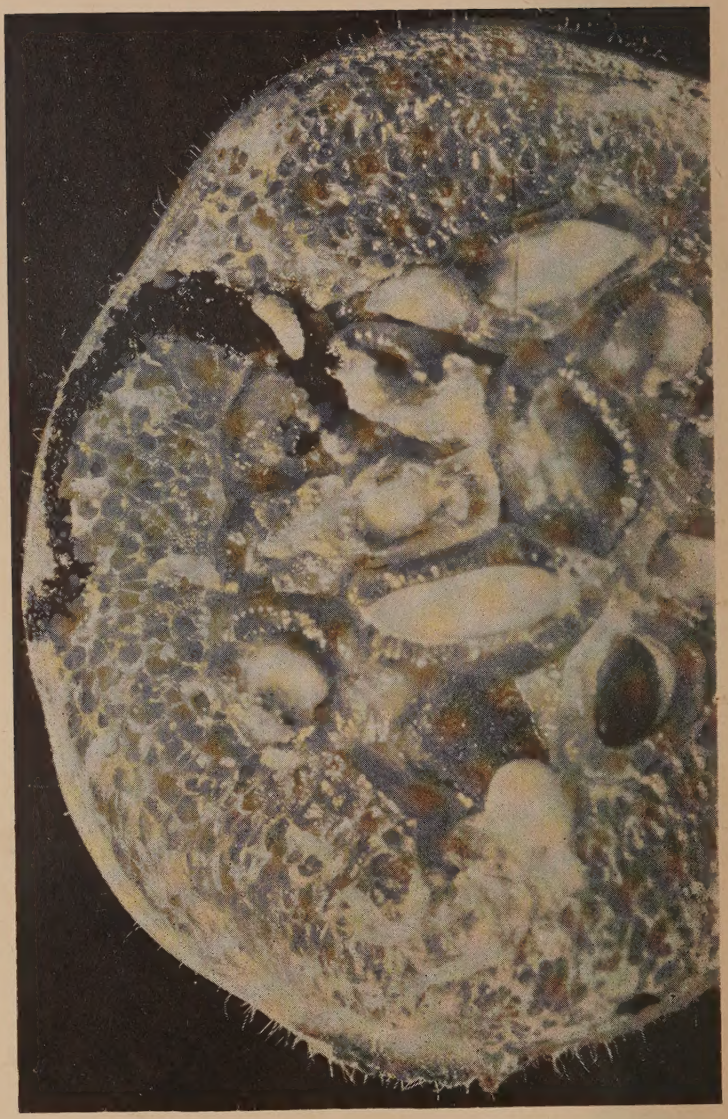


Figure 5. Cross section of gooseberry showing newly-hatched larva and its burrow *(enlarged nine times)*.

Figure 6. Currant or gooseberry maggots. They spend their life feeding within currants or gooseberries *(enlarged nine times).*

Figure 7. The fly spends the fall and winter months within a dark brown pupal case in the soil *(pupal cases enlarged nine times).*

Control by spraying. The following poisoned bait spray is recommended as the most effective spray for the control of this pest:

Arsenate of lead	2 ounces
Cheap molasses	1 quart
Water to make	3 gallons

Sprays should be accurately timed. Since the eggs of the currant fruit flies are laid under the epidermis of the fruit, no sprays can be effective against the larvae. Sprays are directed at the flies before they lay their eggs. The flies begin laying eggs about two weeks after they emerge from the soil. It is necessary, therefore, to begin spraying within one week after the flies begin to emerge. Since the flies emerge over a period of at least one month, more than one spray is necessary for best results. In normal years the first spray should be applied during the second week in April. This date, however, may vary with the season. The most accurate method of timing the first application is to infest a small area of soil by placing infested berries on the ground in May or June. In March of the following year place an insect-proof cage over the infested area and watch for the emergence of the flies in the cage *The first spray should be applied within one week after the flies appear in the cage.* A second method, which is not as accurate as the first, is to apply the first spray as soon as the gooseberries begin to set. See Figure 8, showing stage of growth of the berries at the time the first application is applied.

Sprays should be applied at weekly intervals, beginning one week after the first application and continuing to within one week from the time that harvest begins. Sprays are dissipated by rains and should be repeated after every rain.

How to spray. Interplanted trees, shrubs and trees along nearby fence rows should be sprayed. This precaution is necessary to prevent flies from harboring on these plants and later attacking gooseberries and currants. The spray should be thorough and applied on both sides of the foliage.

Poultry and cultural practices as a supplementary control. Poultry should be encouraged to run in gooseberry and currant plantings as soon as the fruit is harvested. They will destroy many of the infested berries on the ground as well as pupae which may be concealed in trash under currant or gooseberry bushes and in the soil. Frequent cultivation or stirring of the soil will expose many pupae to the weather and will assist poultry in finding the pupae.

Harvest early to avoid infestation. Planting early varieties of gooseberries and harvesting the fruit as soon as possible will assist in reducing wormy fruit.

Cover plants to avoid infestation. Growers who have only a few bushes of gooseberries or currants can protect these by covering them with cheesecloth to keep out the flies. This must be done before the flies begin to emerge. The cheesecloth should be tied to the crown of the bush above the soil and the entire plant covered in such a manner that the flies will not have access to the berries.

Figure 8. Stage of growth of gooseberries when first spray should be applied.

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